Claims:

1. A device for in-situ measurement and recording of at least one parameter in a process, said device comprising:

a sensor for detecting said parameter and converting to a sensor output; and

a data logger coupled to said sensor for receiving and logging said sensor output.

2. The device of claim 1 wherein said data logger comprises a timestamping module for recording a timestamp with said sensor output.

3. The device of claim 2 further comprising a communication module for communicating said sensor output.

4. The device of claim 3 wherein said communication module comprises a transmitter and a receiver.

5. The device of claim 3 wherein said communication module comprises an RF (radio frequency) communication module.

6. The device of claim 1 further comprising a display device.

7. The device of claim 1 wherein said sensor is configured to detect a presence of electrostatic field.

8. The device of claim 7 wherein said sensor is configured to measure a magnitude of said electrostatic field.

9. The device of claim 8 wherein said sensor is configured to detect a change in said electrostatic field.

10. The device of claim 1 wherein said sensor is configured to detect an electrostatic discharge.

11. The device of claim 10 wherein said sensor is configured to measure a magnitude of said electrostatic discharge.

12. The device of claim 1 wherein said data logger comprises an analog to digital converter (ADC) to convert said sensor output into digital data.

13. The device of claim 12 further comprising signal processing circuitry coupled to said sensor for processing said sensor output.

14. A device for in-situ measurement and recording of at least one parameter in a process, said device comprising:

means for detecting said parameter and converting to a sensor output; and

means for receiving and logging said sensor output.

15. The device of claim 14 wherein said means for receiving and logging comprises a timestamping module for recording a timestamp with said sensor output.

16. The device of claim 13 further comprising means for communicating said sensor output.

17. The device of claim 16 wherein said means for communicating comprises a transmitter and a receiver.

18. The device of claim 16 wherein said means for communicating comprises an RF (radio frequency) communication module.

19. A method for in-situ measurement and recording of at least one parameter in a semiconductor fabrication process comprising a plurality of stages, said method comprising:

(a) monitoring said parameter in a stage of said plurality of stages;

(b) converting said parameter into data;

(c) logging said data and an identification of said stage; and

(d) repeating (a) – (d) for said plurality of stages.

20. The method of claim 19 further comprising timestamping said data.

21. The method of claim 20 further comprising signal processing said data.

22. The method of claim 21 further comprising converting said data into digital data.

23. The method of claim 22 further comprising communicating said digital data and said identification of said stage to a base equipment.

24. The method of claim 23 wherein said parameter comprises electrostatic field.

25. The method of claim 24 wherein said parameter comprises a change in said electrostatic field.

26. The method of claim 25 wherein said parameter comprises an electrostatic discharge.

27. The method of claim 26 further comprising eliminating extraneous electrostatic discharges based on said electrostatic discharge and said electrostatic field.

28. A device for in-situ monitoring of at least one environmental parameter in a photolithographic process comprising a plurality of stages, said device comprising:

at least one sensor for converting said environmental parameter of an associated stage into a sensor output;

an analog to digital converter for converting said sensor output to digital data; and

a communication module to communicate said digital data and an identification of said associated stage of said plurality of stages.

29. The device of claim 28 further comprising a data logger for logging said digital data and said identification of said associated stage.

30. The device of claim 29 wherein said communication module comprises a transmitter and a receiver.

31. The device of claim 29 wherein said communication module comprises an RF (radio frequency) communication module.

32. The device of claim 28 further comprising a display device.

33. The device of claim 28 further comprising a sensor for detecting a presence of electrostatic field.

34. The device of claim 33 wherein said sensor is configured to measure a magnitude of said electrostatic field.

35. The device of claim 34 wherein said sensor is configured to detect a change in said electrostatic field.

36. The device of claim 28 further comprising a sensor for detecting an electrostatic discharge.

37. The device of claim 36 wherein said sensor is configured to measure a magnitude of said electrostatic discharge.

38. The device of claim 28 further comprising signal processing circuitry coupled to said plurality of sensors for processing said sensor output.

39. A device for use in conjunction with a reticle for in-situ monitoring of at least one electrical parameter in a semiconductor fabrication process comprising a plurality of stages, said device comprising:

a sensor for converting said electrical parameter of a stage into a sensor output;

an analog to digital converter for converting said sensor output to digital data;

a data logger comprising a timestamping module for logging said digital data and an identification of said stage; and

an RF (radio frequency) communication module coupled to said data logger.

40. The device of claim 39 wherein said electrical parameter comprises electrostatic field.

41. The device of claim 39 wherein electrical parameter comprises an electrostatic discharge.

42. A method for in-situ measurement and recording of at least one parameter in a semiconductor fabrication process comprising at least one stage, said method comprising:

(a) monitoring said parameter in said stage;

(b) converting said parameter into data; and

(c) logging said data and an identification of said stage.

43. The method of claim 42 further comprising

timestamping said data.

44. The method of claim 43 further comprising:

signal processing said data.

45. The method of claim 44 further comprising:

converting said data into digital data.

46. The method of claim 44 further comprising:

communicating said digital data and said identification of said stage to a base equipment.

47. The method of claim 46 wherein said parameter comprises electrostatic field.

48. The method of claim 46 wherein said parameter comprises an electrostatic discharge.

49. A device for monitoring environmental parameters comprising:

an electrostatic sensor for detecting electrostatic field and converting said electrostatic field into a first output;

an electrostatic discharge (ESD) sensor for detecting an electrostatic discharge and converting said electrostatic discharge into a second sensor output;

an analog to digital converter coupled to said electrostatic sensor and said ESD sensor for converting said first and second sensor outputs to first and second digital data, respectively; and

a data logger comprising a timestamping module for logging said first and second digital data.

50. The device of claim 49 further comprising an RF (radio frequency) communication module coupled to said data logger.

51 A method for localizing electrostatic discharges (ESD) by detecting electrostatic discharges and electrostatic field, the method comprising:

detecting an electrostatic discharge and converting it into a first output;

detecting said electrostatic field and converting it into a second output; and

determining a valid local electrostatic discharge based on said first and second outputs.

52. The method of claim 51 wherein said determining comprises determining said valid local electrostatic discharge when said electrostatic discharge is combined with said electrostatic field having a magnitude that exceeds a predetermined value.

53. The method of claim 52 further comprising converting said first and second outputs to first and second digital data, respectively.

54. A device for localizing electrostatic discharges affecting a unit by detecting an electrostatic discharge and electrostatic field, the device comprising:

an electrostatic sensor for detecting said electrostatic field affecting said unit and generating a first output; and

an ESD sensor for detecting said electrostatic discharge affecting said unit and generating a second output.

55. The device of claim 54 further comprising:

an analog comparator coupled to said first output for generating a comparator output when said electrostatic field has a magnitude exceeding a predetermined value.

56. The device of claim 55 further comprising:

a circuit coupled to said analog comparator and to said ESD sensor for receiving said comparator output and said second output, said circuit configured to generate a valid ESD signal when said comparator output and said second output are detected.

57. The device of claim 54 further comprising:

an analog to digital converter (ADC) coupled to said electrostatic sensor and said ESD sensor for converting said first and second outputs to first and second digital data, respectively.

58. The device of claim 57 further comprising:

a digital comparator coupled to said first data and generating a comparator output when said electrostatic field has a magnitude exceeding a predetermined value.

59. The device of claim 58 further comprising:

a circuit coupled to said digital comparator and to said ADC for receiving said comparator output and said second data, said circuit configured to generate a valid ESD signal when said comparator output and said second data are detected.

60. The device of claim 59 wherein said circuit is an AND gate.

61. The device of claim 60 further comprising:

a data logger comprising a timestamping module for logging said first and second digital data.

62. The device of claim 61 further comprising an RF (radio frequency) communication module coupled to said data logger.

63. A method for localizing electrostatic discharges (ESD) by detecting electrostatic discharges and electrostatic field, the method comprising:

detecting an electrostatic discharge and converting it into a first output;

detecting a change in said electrostatic field and converting it into a second output; and

determining a valid local electrostatic discharge based on said first and second outputs.

64. The method of claim 63 wherein said determining comprises determining said valid local electrostatic discharge when said electrostatic discharge is combined with said electrostatic field changing at a rate that exceeds a predetermined value.

65. The method of claim 64 further comprising converting said first and second outputs to first and second digital data, respectively.

66. A device for localizing electrostatic discharges affecting a unit by detecting an electrostatic discharge and electrostatic field;

an electrostatic sensor for detecting a change in said electrostatic field and generating a first output; and

an ESD sensor for detecting said electrostatic discharge and generating a second output.

67. The device of claim 66 further comprising:

a high pass filter coupled to said first output for generating a high pass filter output when said electrostatic field changes at a rate exceeding a predetermined value.

68. The device of claim 67 further comprising:

a circuit coupled to said high pass filter and to said ESD sensor for receiving said high pass filter output and said second output, said circuit configured to generate a valid ESD signal when said high pass filter output and said second output are detected.

69. The device of claim 68 further comprising:

an analog to digital converter (ADC) coupled to said electrostatic sensor and said ESD sensor for converting said first and second outputs to first and second digital data, respectively.

70. The device of claim 69 further comprising:

a high pass filter coupled to said first data for generating a high pass filter output when said electrostatic field changes at a rate exceeding a predetermined value.

71. The device of claim 70 wherein said high pass filter comprises software codes executable by a microprocessor.

72. The device of claim 70 further comprising:

a circuit coupled to said high pass filter and to said ADC for receiving said high pass filter output and said second data, said circuit configured to generate a valid ESD signal when said high pass filter output and said second data are detected.

73. The device of claim 72 wherein said circuit is an AND gate.

74. The device of claim 73 further comprising:

a data logger comprising a timestamping module for logging said first and second digital data.

75. The device of claim 74 further comprising an RF (radio frequency) communication module coupled to said data logger.